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| 09/604,744 | 06/28/2000 | Yasuo Suda | /35.C14593 | 5289 |

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EXAMINER

SOLOMON, GARY L

ART UNIT

PAPER NUMBER

2615

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/604,744

Applicant(s)

SUDA, YASUO

Examiner

Gary L Solomon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 & 15-21 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,6,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9, & ~~17-19~~ are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki (US 4,873,572).

For claim 1, Miyazaki discloses an image pickup apparatus comprising:

first and second image pickup portions for receiving at least a first wavelength component of an object light and a second wavelength component of the object light different from said first wavelength component, respectively (Column 4, Lines 10-26);

first and second optical systems for projecting the object light onto said first and second image pickup portions, respectively, via different optical paths (Figure 1 & 20), said second optical system projecting the object light also onto said first image pickup portions (Figure 1 & 20); and

a guide path forming portion for forming a guide path for receiving the object light projected by said first optical system and guiding the received object light to said first image pickup portion, said guide path forming portion receiving the object light projected by said second optical system onto said first image pickup portion and not guiding the received object light to said first image pickup portion (Figure 20; Column 4, Lines 10-30, Figure 1 and 2a and 2b).

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In Figure 2a and 2b, the portions on the image pickup may be overlapping or non-overlapping.

For claim 2, Miyazaki discloses all the previous limitations and also wherein said first wavelength component is a representative wavelength of light of a first spectral distribution and said second wavelength component is a representative wavelength of light of a second spectral distribution which is different from said first spectral distribution (Column 4, Lines 10-26).

For claims 3 and 4, Miyazaki discloses all the previous limitations and also wherein said first spectral distribution is a spectral distribution including peak wavelength of a luminosity factor (This is inherent. The visible wavelength in the luminosity factor is the color green).

For claim 5, Miyazaki discloses all the previous limitations and also wherein said first and second wavelength components are two different color components among red, green, and blue (Column 4, Lines 10-26).

For claim 6, Miyazaki discloses all the previous limitations and also wherein said first and second optical systems comprise a filter for extracting said first and second wavelength components respectively (Column 4, Lines 10-26).

For claim 7, Miyazaki discloses all the previous limitations and also wherein each of said first and second optical systems comprises a single lens (Figure 20).

For claim 9, Miyazaki discloses all the previous limitations and also wherein a light-shielding layer provided between said integrally formed single lenses (Column 5, Line 55 through Column 6, Line 5).

For claim 17, Miyazaki discloses all the previous limitations further comprising:

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a plurality of openings for taking in external light through said first and second optical systems (Figure 20).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572).

Miyazaki discloses all the previous limitations, but lacks the teaching of the claim. However a single lens provided with an infrared cutting filter is notoriously well known in the art and is used to cut off infrared rays in the lens. Official notice is given.

5. Claim 8, 11, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) in view of Brian (WO 93/11631).

For claim 8, Miyazaki discloses all the previous limitations, but lacks teaching wherein the lenses of said first and second optical systems are integrally formed of a glass material or a resin material. However, Brian teaches a system wherein a plurality of single lenses of said plurality of optical systems are integrally formed of a glass material or a resin material (Page 16, Lines 11-15). Lenses are made of a glass or resin material.

This is notoriously well known in the art and therefore would have been obvious to one of ordinary skill in the art at the time invention to use lenses of glass or resin material in Miyazaki's apparatus because they are a suitable optical material to produce lenses.

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For claim 11, Miyazaki discloses all the previous limitations, but lacks teaching wherein the first and second lenses are made of photo chromic glass. Brian also teaches a system wherein each of said plurality of optical systems comprises photo chromic glass (Page 16, Lines 11-15).

For claim 15, Miyazaki discloses all the previous limitations and also wherein said first and second image pickup portions are integrally formed. Brian discloses all the previous limitations wherein said plurality of image pickup portions are integrally formed (Figure 1; Page 9, Line 24).

For claim 16, Miyazaki discloses all the previous limitations, but lacks teaching wherein said plurality of image pickup portions are formed in a plane shape. Brian teaches wherein said plurality of image pickup portions are formed in a plane shape (Page 16, Lines 17-18).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) in view of Nakanishi (US 6,157,420).

Miyazaki discloses all the previous limitations, but fails to disclose the first and second optical systems comprising a color purity correction filter. However, Nakanishi teaches the use of color purity correction filters (Figures 6A-6C and Column 12, Lines 20-22). The filters are required color correction of color purity and are well known in the art.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine color purity filters with Miyazaki's system in order to restrict one of the RGB colors wavelength ranges.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) in view of Motta (US 5,565,914).

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For claim 13, Miyazaki discloses all the previous limitations, but fails to disclose but lacks teaching wherein there is filter whose transmission factor of the filter becomes smaller as the optical axis becomes longer. However, in analogous art, Motta teaches a filtering function which the transmission factor (sensitivity) becomes smaller as distance from the optical axis (Y) becomes longer in Figure 8A (Column 5, Lines 30-41).

Therefore, it would have been obvious to combine the Miyazaki teaching with the idea of the decreasing transmission factor with distance of Motta in order to increase resolution.

Allowable Subject Matter

8. Claim 14 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for allowance:

The limitations set forth in the claim are not all disclosed in the prior art. The limitation, "when a virtual object distance D [m] is defined as a function of an image pickup angle θ [degrees] of said optical systems to be $D = 1.4/\tan(\theta/2)$," is novel.

10. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is an examiner's statement of reasons for allowance:

The limitation of the claim "second filter for extracting said first wavelength component which comes through said first filter" is not disclosed in the prior art. The references pertinent to

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the disclosed invention each have a filter for the respective component and not the limitation as previously noted.

12. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is an examiner's statement of reasons for allowance:

The limitation of the claim "same polarizing direction as that of said first polarizing filter" is not disclosed in the prior art.

14. Claims 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is an examiner's statement of reasons for allowance:

The following limitations are not disclosed in the prior art: "wherein said guide path forming portion includes a microlens for receiving the object light projected by said first optical system and guiding the object light to said first image pickup portion, said microlens receiving the object light projected by said second optical system onto said first image pickup portion and not guiding the object light to said first image pickup portion".

The prior art doesn't disclose a microlens that guides light from a first optical system to the first image pickup portion and a microlens receiving light from the second optical system and not guiding it to the first image pickup portion.

Claim 21 adds a further limitation of the microlens being offset.

Conclusion

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L Solomon whose telephone number is (703)-305-4370.

17. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary, Vu Le can be reached on (703)-308-6613.

Any response to this action should be mailed to:

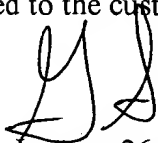
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 872-9314, (for informal or draft communications, please label
"Proposed" or "Draft")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be
directed to the customer service number (703) 306-0377.



January 26, 2004



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